REMARKS

Claims 1-5, 8-11, 13, 14, 16-21 and 29-40 are currently pending. Claims 1, 8, 10, 11, 13, 17, 19, 20, 36 and 40 have been amended.

Claims 1, 17 and 40 have been amended to recite a bearing surface bonded to a surface that at least partially defines the second portion of the aperture. Support for this amendment can be found at page 9 (paragraph **[0042]**) of Applicants' specification and FIG. 10.

Claims 8 and 20 have been amended to delete "segmented."

Claims 10 and 40 have been amended to recite "the second portion being wider in a transverse direction than the first portion" (i.e., "second portion" and "first portion" have been transposed). Claim 36 has been amended to be consistent with Claim 10. Support for this amendment can be found at page 6, paragraph **[0029]** of Applicants' specification and FIG. 10.

Claims 10 and 19 have been amended to recite that the second portions and the T-nuts have matching shapes which prevents rotation of the T-nuts. Support for this amendment can be found at pages 7-8, paragraph **[0033]** of Applicants' specification.

Claims 11 and 13 have been amended to recite "fastener members." Support for this amendment can be found at page 5, paragraph **[0026]** of Applicants' specification.

Claim 40 has been amended to recite "electrode plate" and a graphite "backing plate." Support for this amendment can be found at page 5, paragraph **[0024]**.

No new matter has been added. Reconsideration and allowance are respectfully requested in view of the following remarks.

Objections to Drawings

The drawings were objected to under 37 C.F.R. § 1.83(a) because the claim features of "connectors," "segmented outer member," "first plate," second plate" and "first portion being wider in a transverse direction than the second portion" were allegedly not shown in the drawings.

Claims 8, 10, 11 and 40 have been amended to be consistent with the specification and drawings. As to Claim 8, the claim feature of "segmented" has been deleted. As to Claim 10, the claim feature of "second portion being wider in a transverse direction" is illustrated in FIG. 9 and described in paragraph **[0029]** of the Applicants' specification. Paragraph **[0029]** describes a first portion 37 and a wider second portion 45, as illustrated in FIG. 9. From FIG. 9, second portion 45 is wider in a transverse direction than first portion 37. As to Claim 11, the claim feature of "connectors" has been deleted and replaced with "fastener members." Such "fastener members" correspond to reference character 28 in FIGS. 1-3, 6 and 7; reference character 38 in FIGS. 4 and 5; and reference character 128 in FIG. 10. As to Claim 40, the claim feature of "first plate" has been replaced with "electrode plate"; and the claim feature of "second plate" has been replaced with "backing plate." The "electrode plate" corresponds to reference characters 12, 14 in FIGS. 1-3 and 10; "backing plate" corresponds to reference character 18 in FIGS. 1, 5, 6 and 8.

In view of Applicants' amendment to Claims 8, 10, 11 and 40, Applicants respectfully request withdrawal of the objection to the drawings.

Objections to the Specification

The specification was objected to under 37 C.F.R. § 1.75(d)(1) as failing to provide proper antecedent basis for the claimed subject matter.

However, as discussed above, Claims 8, 10, 11 and 40 have been amended to be consistent with the specification and drawings. In view of Applicants' amendments to Claims 8, 10, 11 and 40, Applicants respectfully request withdrawal of the objection to the specification.

Claim Rejection - 35 U.S.C. § 112, ¶1

Claim 40 has been rejected under U.S.C. § 112, first paragraph, as failing to comply with the written description requirement. The Official Action contends that Applicant's claim feature of the "first portion being wider in a transverse direction than the second portion" is not supported by the specification and drawings.

However, as discussed above, Claim 40 has been amend to recite "the second portion being wider in a transverse direction than the first portion" (i.e., "second portion" and "first portion" have been transposed). Paragraph **[0029]** describes a first portion 37 and a wider second portion 45, as illustrated in FIG. 9. From FIG. 9, second portion 45 is wider in a transverse direction than first portion 37.

In view of Applicants' amendments to Claim 40, Applicants respectfully request withdrawal of the rejection of Claim 40 under U.S.C. § 112, first paragraph.

Claims Rejections - 35 U.S.C. § 103

Claims 1-5, 8-11, 13, 14, 16-21 and 29-40 have been rejected under 35 U.S.C. § 103(a) as allegedly unpatentable over Katoh (U.S. Patent No. 6,207,006) ("Katoh ") and Hao et al. (U.S. Patent No. 6,123,775) ("Hao") in view of Nishimura (Japanese Publication No. 4316709) ("Nishimura"). Applicants respectfully traverse this rejection.

Claim 1 recites, *inter alia*, a component of a plasma processing apparatus, comprising, a graphite backing plate bonded to a silicon showerhead electrode; and a plurality of first fastener members each mounted in an aperture of the backing plate, each first fastener member including a non-circular shaped head configured to prevent rotation of the first fastener members relative to the backing plate (emphasis added).

Claim 10 recites, inter alia, a component of a plasma processing apparatus, comprising, a backing plate including a first surface spaced from a second surface, the first surface contacting and being bonded to the attachment surface of the showerhead electrode; and T-nuts having a T-shape located in the second portions of the apertures (emphasis added).

Claim 17 recites, *inter alia*, a showerhead electrode assembly for a plasma processing apparatus, comprising, a graphite backing member secured to the silicon showerhead electrode, the backing member including a plurality of through apertures each having a first portion and a second portion wider than the first portion; a plurality of T-nuts having a T-shape.

Claim 40 recites, *inter alia*, a component of a plasma processing apparatus, comprising the bottom surface of the backing plate contacting and bonded to the top surface of the electrode, a plurality of fastener members each mounted in an aperture of the backing plate, each fastener member including a head configured to prevent rotation of the fastener member in the aperture and having a bearing surface bonded to a surface that at least partially defines the second portion of the aperture.

The Official Action acknowledges that Katoh does not disclose all features of Claims 1, 10, 17 and 40 (Official Action at page 13, ¶ i-iii), but cites Hao for the alleged disclosure of a graphite backing plate and a silicon showerhead electrode

(Official Action at page 19, lines 8-9) and cites Nishimura for the alleged disclosure of a T-nut (Official Action at page 19, lines 10-15).

A. The Official Action Has Misidentified Features of Katoh

The structure of Katoh contained within large diameter through-hole **137** includes a bellows **141**, which has been misidentified in the Official Action as a "screw" (Official Action at page 4, ¶7, line 15). Elevation shafts **134** of Katoh attach elevation ring **133** to head body **116** (column 5, lines 49-58), such that elevation shaft **134** passes through small diameter through hole **138** and large diameter through hole **137** (column 6, lines 25-24; FIG. 9). Katoh further discloses that bellows **141** (located in large diameter through hole **137**) functions to form an air-tight seal between the interior of diffusion chamber **122** maintained in a vacuum condition and atmospheric pressure (column 6, lines 42-50).

The Official Action has not provided a rationale as to why one of ordinary skill in the art would be replace the bellows **141** of Katoh with the T-nut of of Nishimura. As such, the Official Action fails to set forth a proper foundation for the combination of Katoh and Nishimura.

B. The Combination of the Figure 11 Prior Art Embodiment of Katoh with the Figure 9 Embodiment of Katoh Is Improper

The Official Action contends that Applicants' "backing plate" corresponds to the head body (e) of Katoh; and Applicants' "showerhead electrode" corresponds to the porous disk (d) (a portion of showerhead (c)) of Katoh (Official Action at page 4, ¶7, lines 5-6). The FIG. 11 prior art embodiment provides no disclosure of head body (e) with "through apertures" or "axially extending apertures," as recited in Claims 1, 10, 17 and 40. The FIG. 9 embodiment of Katoh is cited for the alleged

disclosure of "through openings" or "axially extending apertures" (Official Action at page 4, ¶7, lines 7-8; at page 8, lines 6-8).

In rejecting Claims 1, 10, 17 and 40, the Official Action has combined features from the FIG. 11 prior art embodiment of Katoh with the FIG. 9 embodiment of Katoh (Official Action at page 4, ¶7, underlined text; at page 6, ¶ iii, lines 12-14; at page 8, ¶ vii, lines 18-20; at page 10, lines 4-6; at page 12, ¶ xiii, lines 12-14). The Official Action further contends that the claim feature of "a backing plate bonded to a showerhead electrode" is a product-by-process limitation and that because the Examiner has provided a rationale tending to show that the claimed product appears to be the same or similar to that of the prior art, although produced by a different process, the burden shifts to the Applicants to come forward with evidence showing an unobvious difference (Official Action at pages 4-5, bridging paragraph; at pages 6-7, bridging paragraph; at page 10, lines 8-15; at pages 11-12, bridging paragraph).

However, the Official Action has not provided any articulated reasoning of why one of ordinary skill in the art would combine the FIG. 11 prior art embodiment of Katoh with the FIG. 9 embodiment of Kotah. To the extent the Examiner is relying on combining prior art elements according to known methods to yield predictable results, M.P.E.P. § 2143 (A) states that the Examiner must articulate the following:

> (1) a finding that the prior art included each element claimed, although not necessarily in a single prior art reference, with the only difference between the claimed invention and the prior art being the lack of actual combination of the elements in a single prior art reference;
> (2) a finding that one of ordinary skill in the art could have combined the elements as claimed by known methods, and that in combination, each element merely performs the same function as it does separately;
> (3) a finding that one of ordinary skill in the art would have recognized that the results of the combination were predictable; and
> (4) whatever additional findings based on the *Graham* factual inquiries may be necessary, in view of the facts of the case under consideration, to explain a conclusion of obviousness (emphasis added).

M.P.E.P. § 2143 (A) further states that if any one of these findings cannot be made, than this rationale cannot be used to support a conclusion that the claim would have been obvious to one of ordinary skill in the art. The Official Action has not including finding (2) and as explained below, the combination of the FIG. 11 prior art embodiment of the Katoh with the FIG. 9 embodiment of Katoh would go against the teachings of Katoh.

1. **The Figure 11 Prior Art Embodiment of Katoh Functions with a Fixed Porous Disk**

In the FIG. 11 prior art embodiment, Katoh discloses that head body (e) (or "backing plate") is fixed to porous disk (d) (or "showerhead electrode") (column 1, lines 30-35; FIG. 11). However, Katoh discloses that one problem associated with the FIG. 11 embodiment is that for a transfer arm to transfer wafer W in and out of the process chamber, the distance between the mount stand and porous disk is set at 18 mm (column 1, lines 66 to column 2, line 15). However, at this fixed distance, process gas is not applied uniformly over wafer W (column 2, lines 10-15).

2. **The Figure 9 Embodiment of Katoh Functions with a Movable Porous Disk**

The FIG. 9 embodiment of Katoh is directed at a plasma processing apparatus with a movable porous disk **117** that can be positioned close to the wafer W (e.g., 10 mm) such that process gas is distributed uniformly over the surface of the wafer (W) (column 7, lines 40-55) and retractable such that the distance between the wafer (W) and porous disk **117** is sufficient (e.g., 18 mm) for a transfer arm to move the wafer (W) without obstruction (column 8, lines 35-40). Katoh further discloses that "porous disk **117** ... is arranged to be elevated up and down with respect to the head body **116** (column 5, lines 6-7). Moreover, porous disk **117** is

fixed to a plurality of elevation shafts **134** for moving the porous disk **117** up and down (column 6, lines 1-8).

Thus, the combination of the FIG. 11 embodiment (i.e., porous disk (d) fixed to the head body (e)) (column 1, lines 31-33) with the FIG. 9 embodiment (i.e., porous disk elevated up and down with respect to the head body) (column 5, lines 6-7) would go against the functionality of Katoh's FIG. 9 embodiment, because the porous disk is no longer movable.

Because a *prima facie* case of obviousness has not been established, Applicants respectfully request withdrawal of the rejection of Claims 1, 10, 17 and 40 under 35 U.S.C. §103(a). Dependent Claims 2-5, 8, 9, 11, 13, 14, 16, 18-21 and 29-39 are also patentable over the applied combination of references at least for the same reasons as those discussed above regarding Claims 1, 10, 17 and 40.

Conclusion

For the foregoing reasons, allowance of the application is respectfully requested. If there are any questions concerning this response, the Examiner is respectfully requested to contact the undersigned at the number given below.

Respectfully submitted,

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